

FORM PTO-100 (Modified)
(REV 11-2000)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES

753-11 PCT/US

DESIGNATED/ELECTED OFFICE (DO/EO/US)

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

CONCERNING A FILING UNDER 35 U.S.C. 371

10/088070

INTERNATIONAL APPLICATION NO.

INTERNATIONAL FILING DATE

PRIORITY DATE CLAIMED

PCT/CH00/00501

18 September 2000

16 September 1999

TITLE OF INVENTION

DEVICE FOR THERMALLY SHRINKING TOOLS

APPLICANT(S) FOR DO/EO/US

Ernst Gerber

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
 2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
 3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (24) indicated below.
 4. ☒ The US has been elected by the expiration of 19 months from the priority date (Article 31).
 5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (e) (2))
 - a. ☒ is attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ has been communicated by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
 6. ☒ An English language translation of the International Application as filed (35 U.S.C. 371(e)(2)).
 - a. ☒ is attached hereto.
 - b. ☐ has been previously submitted under 35 U.S.C. 154(d)(4).
 7. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☒ are attached hereto (required only if not communicated by the International Bureau).
 - b. ☐ have been communicated by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☐ have not been made and will not be made.
 8. ☒ An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
 9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
 10. ☒ An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).
 11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
 12. ☐ A copy of the International Search Report (PCT/ISA/210).
- Items 13 to 20 below concern document(s) or information included:**
13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
 14. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
 15. ☐ A **FIRST** preliminary amendment.
 16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.
 17. ☒ A substitute specification.
 18. ☐ A change of power of attorney and/or address letter.
 19. ☐ A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825.
 20. ☐ A second copy of the published international application under 35 U.S.C. 154(d)(4).
 21. ☐ A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4).
 22. ☒ Certificate of Mailing by Express Mail
 23. ☒ Other items or information:

**Communication;
Small Entity Declaration**

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 1.53) 107 088070		INTERNATIONAL APPLICATION NO. PCT/CH00/00501		ATTORNEY'S DOCKET NUMBER 753-11 PCT/US																			
24. The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) : <input type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$1040.00 <input checked="" type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$890.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$740.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$710.00 <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4) \$100.00 <div style="text-align: right;">ENTER APPROPRIATE BASIC FEE AMOUNT =</div>				CALCULATIONS PTO USE ONLY																			
Surcharge of \$130.00 for furnishing the oath or declaration later than _____ months from the earliest claimed priority date (37 CFR 1.492 (e)). <input type="checkbox"/> 20 <input type="checkbox"/> 30				\$890.00																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:15%;">CLAIMS</th> <th style="width:15%;">NUMBER FILED</th> <th style="width:15%;">NUMBER EXTRA</th> <th style="width:15%;">RATE</th> <th style="width:15%;"></th> <th style="width:15%;"></th> </tr> </thead> <tbody> <tr> <td>Total claims</td> <td>5 - 20 =</td> <td>0</td> <td>x \$18.00</td> <td></td> <td style="text-align: right;">\$0.00</td> </tr> <tr> <td>Independent claims</td> <td>1 - 3 =</td> <td>0</td> <td>x \$84.00</td> <td></td> <td style="text-align: right;">\$0.00</td> </tr> </tbody> </table>				CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE			Total claims	5 - 20 =	0	x \$18.00		\$0.00	Independent claims	1 - 3 =	0	x \$84.00		\$0.00	\$0.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE																				
Total claims	5 - 20 =	0	x \$18.00		\$0.00																		
Independent claims	1 - 3 =	0	x \$84.00		\$0.00																		
Multiple Dependent Claims (check if applicable) <input type="checkbox"/>				\$0.00																			
TOTAL OF ABOVE CALCULATIONS =				\$890.00																			
<input checked="" type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$445.00																			
SUBTOTAL =				\$445.00																			
Processing fee of \$130.00 for furnishing the English translation later than _____ months from the earliest claimed priority date (37 CFR 1.492 (f)). <input type="checkbox"/> 20 <input type="checkbox"/> 30				\$0.00																			
TOTAL NATIONAL FEE =				\$445.00																			
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). <input checked="" type="checkbox"/>				\$40.00																			
TOTAL FEES ENCLOSED =				\$485.00																			
Amount to be refunded				\$																			
charged				\$																			
a. <input checked="" type="checkbox"/> A check in the amount of \$485.00 to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 08-2461 A duplicate copy of this sheet is enclosed. d. <input type="checkbox"/> Fees are to be charged to a credit card. WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.																							
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.																							
SEND ALL CORRESPONDENCE TO:																							
Ludomir A. Budzyn, Esq. Hoffmann & Baron, LLP 6900 Jericho Turnpike Syosset, New York 11791 (973) 331-1700				<div style="text-align: center;"> </div> SIGNATURE Ludomir A. Budzyn NAME 40,540 REGISTRATION NUMBER March 8, 2002 DATE																			

WO 01/19558

PCT/CH00/00501

**SUBSTITUTE
SPECIFICATION**

DEVICE FOR THERMALLY SHRINKING TOOLS

Inventor: Ernst Gerber

Attorney Docket No.: 753-11 PCT/US

10/088070.04988070

Device for thermally shrinking tools

The invention relates to a device for thermally shrinking and expanding tools and other machine parts in a holder.

5

It is known in the metalworking and woodworking industry thermally to shrink tools in a holder. This is done by heating the holder and then inserting the tool shank. On cooling, the holder closes around the shank to create a firm, high-precision tool-holding device.

10

To enable the shank to be removed (tool expansion), the holder must be made of a material which has a larger thermal expansion than the shank. For a shank made of hard metal with a coefficient of thermal expansion of 6.10^{-6} , an example of a suitable holder is one made of steel, which has twice the thermal expansion. A steel shank would in turn require a holder made of an aluminium alloy with a coefficient of thermal expansion twice that of steel.

15

If the holder and the shank to be shrunk are made of materials with the same or approximately the same thermal expansion, it is still possible to shrink the shank because only the holder is heated in the shrinking process, the shank being cold. Tool expansion is normally no longer possible because, when the holder is heated, the good thermal conductivity of metals is such that the shrunk shank heats up and expands together with said holder.

20

Even for shrinking, the shank has to be introduced quickly because the heat transfers very rapidly from the holder to the shank due to the good thermal conductance of metals.

25

The smaller the bore of the holder, the smaller is the thermal expansion on heating and the more exacting are the work tolerances. For example, if the thermal expansion is 0.048 mm for a bore diameter of 20 mm, then for the same material it is only 0.0072 mm for a bore diameter of 3 mm.

30

DE-19638808-A1 discloses a tool holder in which the tool shank is shrunk not in the clamping chuck but in a collet chuck. The latter is conventionally inserted in the conical housing of the clamping chuck by means of tensioning nuts. This device suffers from the same problems between collet chuck and tool shank as do
5 the conventional shrink chucks in which a tool shank is shrunk directly.

The object of the invention is to avoid these disadvantages associated with thermal shrinking.

10 This is achieved according to the invention by means of a sleeve inserted in the bore of the holder, said sleeve preferably being made of a material with a low thermal conductivity.

A preferred embodiment of the invention will be described below with the aid of
15 the attached drawing.

The drawing is a sectional diagram of a tool holder 1 with an inserted tool 2, which in this case is a twist drill. The width of the bore 3 of the holder is approximately twice the diameter of the drill shank. A sleeve 4 is located between the drill 2 and the holder. The sleeve is provided with slits cut in from one end, or alternately
20 from both ends, to assure a degree of elasticity. However, the slits can also be omitted, depending on the material and the wall thickness.

As stated, the material of the sleeve 4 preferably has a low thermal conductivity so
25 that the heat transfer from the heated holder to the tool is substantially delayed.

If the sleeve material does not have an especially low thermal conductivity, tool shrinking and expansion are facilitated by the greater thermal expansion due to the larger diameter of the holder, the only condition being that heating takes place
30 rapidly, as in the case of inductive heating.

Apart from a low thermal conductivity, however, the material must also have a sufficiently high strength, toughness and hardness to cope with the stresses applied. Certain ceramic materials, e.g. zirconium oxide ceramic, offer this combination of properties.

5

The sleeve can be inserted in the tool holder in a variety of ways. It can either be inserted in the holder as an interchangeable reducing sleeve or fixed firmly to the holder, e.g. by press-fitting, adhesion, screwing, etc.

- 10 The advantages of interchangeable sleeves are as follows: With a holder of specific bore diameter, the insertion of interchangeable reducing sleeves makes it possible to clamp tools with different shank diameters.

- 15 When the holder is heated, the greater thermal expansion of the bore of the holder is transferred linearly through the reducing sleeve to its smaller bore. In this way, tool shanks made of a material with the same coefficient of thermal expansion as the holder can be shrunk and also expanded again.

- 20 Another advantage is that the small bore diameters of the reducing sleeve do not have to be manufactured with such extremely small work tolerances.

If overstressing causes the tool shank to rotate in the housing, at worst the reducing sleeve, and not the holder, will be damaged.

Claims

1. Tool holder for thermally shrinking tools and machine parts, having a sleeve
between the bore of the holder and the tool shank or part, characterized in that
5 the sleeve is a reducing sleeve that transfers a holding action exerted by the
holder in its cold state to the tool shank or part.
2. Device according to claim 1, characterized in that the sleeve is made of a
material with a low thermal conductivity.
- 10 3. Device according to claim 1, characterized in that the sleeve is made of
ceramic.
4. Device according to claim 1, characterized in that the sleeve takes the form
15 of an interchangeable reducing sleeve.
5. Device according to claim 1, characterized in that the sleeve is firmly fixed
to the holder.

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1

Device for thermally shrinking tools

The invention relates to a device for thermally shrinking and expanding tools and other machine parts in a holder.

5

It is known in the metalworking and woodworking industry thermally to shrink tools in a holder. This is done by heating the holder and then inserting the tool shank. On cooling, the holder closes around the shank to create a firm, high-precision tool-holding device.

10

To enable the shank to be removed (tool expansion), the holder must be made of a material which has a larger thermal expansion than the shank. For a shank made of hard metal with a coefficient of thermal expansion of $6 \cdot 10^{-6}$, an example of a suitable holder is one made of steel, which has twice the thermal expansion. A steel shank would in turn require a holder made of an aluminium alloy with a coefficient of thermal expansion twice that of steel.

15

If the holder and the shank to be shrunk are made of materials with the same or approximately the same thermal expansion, it is still possible to shrink the shank because only the holder is heated in the shrinking process, the shank being cold. Tool expansion is normally no longer possible because, when the holder is heated, the good thermal conductivity of metals is such that the shrunk shank heats up and expands together with said holder.

20

Even for shrinking, the shank has to be introduced quickly because the heat transfers very rapidly from the holder to the shank due to the good thermal conductance of metals.

25

The smaller the bore of the holder, the smaller is the thermal expansion on heating and the more exacting are the work tolerances. For example, if the thermal expansion is 0.048 mm for a bore diameter of 20 mm, then for the same material it is only 0.0072 mm for a bore diameter of 3 mm.

30

The object of the invention is to avoid these disadvantages associated with thermal

shrinking.

- This is achieved according to the invention by means of a sleeve inserted in the bore of the holder, said sleeve preferably being made of a material with a low thermal conductivity.

A preferred embodiment of the invention will be described below with the aid of the attached drawing.

- 10 The drawing is a sectional diagram of a tool holder 1 with an inserted tool 2, which in this case is a twist drill. The width of the bore 3 of the holder is approximately twice the diameter of the drill shank. A sleeve 4 is located between the drill 2 and the holder. The sleeve is provided with slits cut in from one end, or alternately from both ends, to assure a degree of elasticity. However, the slits can also be
- 15 omitted, depending on the material and the wall thickness.

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- 20 If the sleeve material does not have an especially low thermal conductivity, tool shrinking and expansion are facilitated by the greater thermal expansion due to the larger diameter of the holder, the only condition being that heating takes place rapidly, as in the case of inductive heating.
- 25 Apart from a low thermal conductivity, however, the material must also have a sufficiently high strength, toughness and hardness to cope with the stresses applied. Certain ceramic materials, e.g. zirconium oxide ceramic, offer this combination of properties.
- 30 The sleeve can be inserted in the tool holder in a variety of ways. It can either be inserted in the holder as an interchangeable reducing sleeve or fixed firmly to the holder, e.g. by press-fitting, adhesion, screwing, etc.

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bore diameter, the insertion of interchangeable reducing sleeves makes it possible to clamp tools with different shank diameters.

- 5 When the holder is heated, the greater thermal expansion of the bore of the holder is transferred linearly through the reducing sleeve to its smaller bore. In this way, tool shanks made of a material with the same coefficient of thermal expansion as the holder can be shrunk and also expanded again.

- 10 Another advantage is that the small bore diameters of the reducing sleeve do not have to be manufactured with such extremely small work tolerances.

If overstressing causes the tool shank to rotate in the housing, at worst the reducing sleeve, and not the holder, will be damaged.

Claims

1. Device for thermally shrinking and expanding tools and other machine parts in a holder, characterized in that a sleeve is inserted in the bore of the holder.
- 5 2. Device according to claim 1, characterized in that the sleeve is made of a material with a low thermal conductivity.
3. Device according to claim 1, characterized in that the sleeve is made of
10 ceramic.
4. Device according to claim 1, characterized in that the sleeve takes the form of an interchangeable reducing sleeve.
- 15 5. Device according to claim 1, characterized in that the sleeve is firmly fixed to the holder.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG

(19) Weltorganisation für geistiges Eigentum
Internationales Büro



INTERNATIONAL BUREAU OF INDUSTRIAL PROPERTY
CHÂTEAU DE SAUVIGNY, 1201 GENEVE 20, SUISSE

(43) Internationales Veröffentlichungsdatum
22. März 2001 (22.03.2001)

PCT

(10) Internationale Veröffentlichungsnummer
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(51) Internationale Patentklassifikation: B23B 31/17,
31/20

(72) Erfinder; und

(75) Erfinder/Anmelder (nur für US): GERBER, Ernst
[CH/CH]; Untere Chlißeren 4, CH-4418 Reigoldswil
(CH).

(21) Internationales Aktenzeichen: PCT/CH00/00501

(22) Internationales Anmeldedatum:
18. September 2000 (18.09.2000)

(74) Anwalt: BRAUN, André; Braun & Partner, Reussstrasse
22, CH-4054 Basel (CH).

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:
1699/99 16. September 1999 (16.09.1999) CH

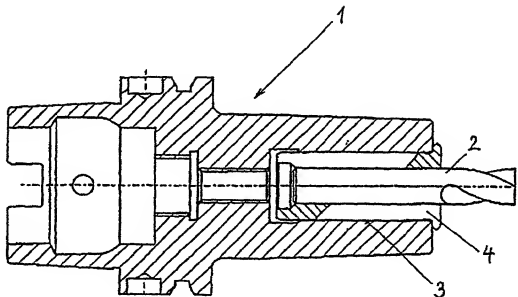
(71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme
von US): REGO-FIX AG [CH/CH]; Obermattweg 60,
CH-4456 Tenniken (CH).

(81) Bestimmungsstaaten (national): AE, AG, AL, AM, AT,
AT (Gebrauchsmuster), AU, AZ, BA, BB, BG, BR, BY, BZ,
CA, CH, CN, CR, CU, CZ, CZ (Gebrauchsmuster), DE, DE
(Gebrauchsmuster), DK, DK (Gebrauchsmuster), DM, DZ,
EE, EE (Gebrauchsmuster), ES, FI, FI (Gebrauchsmuster),
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KR (Gebrauchsmuster), KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,

[Fortsetzung auf der nächsten Seite]

(54) Title: DEVICE FOR THERMALLY SHRINKING TOOLS

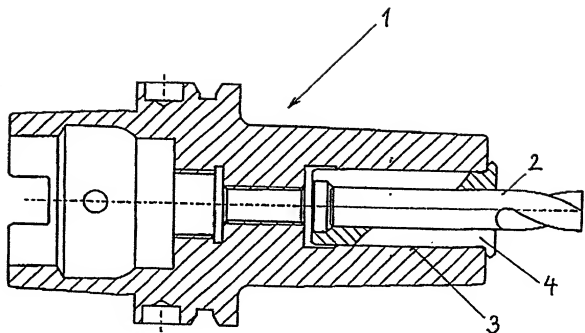
(54) Bezeichnung: VORRICHTUNG ZUM THERMISCHEN EINSCHRUMPFEN VON WERKZEUGEN



(57) Abstract: The invention relates to a device for thermally shrinking and expanding tools (2) in a holder (1). Said device comprises a sleeve (4) which is inserted into the bore of the holder and which preferably consists of a material with a low thermal conductivity, for example a ceramic. The sleeve (4) is either configured as an interchangeable reducing sleeve or is connected to the holder in a fixed manner.

[Fortsetzung auf der nächsten Seite]

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COMBINED DECLARATION AND POWER OF ATTORNEY

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL,
DIVISIONAL, CONTINUATION OR CIP)

As a below named inventor, I hereby declare that:

TYPE OF DECLARATION

This declaration is of the following type: (check one)

☐ Original☐ Supplemental☐ Design☒ National Stage PCT☐ Divisional☐ Continuation☐ Continuation-in-Part (CIP)

INVENTORSHIP IDENTIFICATION

NOTE: If the inventors are each not the inventors of all the claims an explanation of the facts, including the ownership of all the claims at the time the last claimed invention was made, should be submitted.

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

DEVICE FOR THERMALLY SHRINKING TOOLS

the specification of which: (complete (a), (b) or (c))

(a) ☒ is attached hereto.(b) ☐ was filed on _____, as☐ Serial No. _____ or☐ Express Mail No. _____, as Serial No. not yet known
and was amended on _____. (If applicable)(c) ☒ was described and claimed in PCT International Application No. PCT/CH00/00501
filed on 18.9.00 and as amended under PCT Article 19 on 8.10.01 (if any)
& 14/01/02

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above, and that the filing of said specification, if heretofore filed, was authorized by me.

I acknowledge the duty to disclose information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

CLAIM OF PRIORITY OF EARLIER FOREIGN APPLICATION(S) UNDER 35 U.S.C. §119(a)-(d)

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate or of any PCT international application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application(s) for patent or inventor's certificate or any PCT international application(s) designating at least one country other than the United States of America filed by me on the same subject matter having a filing date before that of the application(s) of which priority is claimed:

(List prior foreign/PCT application(s) filed within 12 months (6 months for design) prior to this U.S. application.)

NOTE: Where item (c) is entered above and the International Application which designated the U.S. claimed priority check item (e), enter the details below and make the priority claim.

COUNTRY (orPCT)	APPLICATION NO.	DATE OF FILING (Day/Month/Year)	PRIORITY CLAIMED UNDER 35 USC §119	
PCT	PCT/CH00/00501	18.09.2000	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
CH	1699/99	16.09.1999	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO

CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATION(S) UNDER 35 U.S.C. §119(e)

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below:

(List prior U.S. provisional applications.)

PROVISIONAL APPLICATION NO.	FILING DATE (Day/Month/Year)

CLAIM FOR BENEFIT OF EARLIER U.S./PCT APPLICATION(S) UNDER 35 U.S.C. 120

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT international application(s) designating the United States of America that is/are listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in such prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application:

(List prior U.S. applications or PCT international applications designating the U.S. for benefit under 35 U.S.C. §120.)

U.S. APPLICATIONS

STATUS (Check One)

U.S. SERIAL NO.	U.S. FILING DATE (Day/Month/Year)	Patented	Pending	Abandoned
0 /		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0 /		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PCT APPLICATIONS DESIGNATING THE U.S.

STATUS (Check One)

PCT APPLN. NO.	PCT FILING DATE (Day/Month/Year)	U.S. SERIAL NOS ASSIGNED (if any)	Patented	Pending	Abandoned
PCT/			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PCT/			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35 USC 119 PRIORITY CLAIM, IF ANY, FOR ABOVE LISTED U.S./PCT APPLICATIONS

PRIORITY APPLICATION NO.	PRIORITY COUNTRY	FILING DATE (Day/Month/Year)	ISSUE DATE (Day/Month/Year)

POWER OF ATTORNEY

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office in connection therewith:

Charles R. Hoffmann, Reg. No. 24,102; Ronald J. Baron, Reg. No. 29,281; Gerald T. Bodner, Reg. No. 30,449; Alan M. Sack, Reg. No. 31,874; A. Thomas Kammer, Reg. No. 26,220; R. Glenn Schroeder, Reg. No. 34,720; Glenn T. Henneberger, Reg. No. 36,074; Irving N. Feit, Reg. No. 28,601; Anthony E. Bennett, Reg. No. 40,910; Gregory W. Bachmann, Reg. No. 41,593; Steven T. Zuschlag, Reg. No. 43,309; Susan A. Sipos, Reg. No. 43,129; Kevin E. McDermott, Reg. No. 35,946; Robert C. Morris, Reg. No. 42,910; Roderick S.W. Turner, Reg. No. 36,639; James F. Harrington, Reg. No. 44,741; Samir R. Patel, Reg. No. 44,998; Richard LaCava, Reg. No. 41,135; Alexis Anilionis, Reg. No. 36,995; Justin K. Holmes, Reg. No. 42,666; Joseph J. Catanzaro, Reg. No. 25,837; and Robert L. Bernstein, Reg. No. P-46,020, each of them of HOFFMANN & BARON, LLP, 6900 Jericho Turnpike, Syosset, New York 11791; and Daniel A. Scola, Jr., Reg. No. 29,855; Salvatore J. Abbruzzese, Reg. No. 30,152; Kirk M. Miles, Reg. No. 37,891; Robert F. Chisholm, Reg. No. 39,939; Kelyanne Merkel, Reg. No. 43,800; Keith R. Lange, Reg. No. 44,201; John Sopko, Reg. No. 41,321; Barry Jacobsen, Reg. No. 43,689; Gloria K. Szakiel, Reg. No. 45,149; and Mark E. Baron, Reg. No. 46,150, each of them of HOFFMANN & BARON, LLP, 1055 Parsippany Boulevard, Parsippany, New Jersey 07054.

PLEASE SEND CORRESPONDENCE TO:

Daniel A. Scola, Jr.
HOFFMANN & BARON, LLP
6900 Jericho Turnpike
Syosset, New York 11791

PLEASE DIRECT TELEPHONE CALLS TO:

Keith R. Lange
(973) 331-1700

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)

150 Full Name of Sole or First Inventor: Ernst GERBER

Country of Citizenship: Switzerland

Residence Address: CH#4418 Reigoldswil

Post Office Address: Untere Chlöberen 4

Date: 18.08.2009 Inventor's signature E. Gerber

NOTE: All above spaces identifying inventors must be completed or deleted before any inventor executes this application

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR 1.9(f) AND 1.27 (c)) - SMALL BUSINESS CONCERN**

Docket No.

Serial No.

Filing Date

Patent No.

Issue Date

Unassigned

Unassigned

Applicant/

Patentee:

Rego-Fix AG

Invention:

DEVICE FOR THERMALLY SHRINKING TOOLS.

I hereby declare that I am:

- ☐ the owner of the small business concern identified below:
☒ an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN:

Rego-Fix AG

ADDRESS OF CONCERN:

Obermattweg 60, CH-4456 Tenniken/Switzerland

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 37 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the above identified invention described in:

- ☐ the specification filed herewith with title as listed above.
☒ the application identified above.
☐ the patent identified above.

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed on the next page and no rights to the invention are held by any person, other than the inventor, who could not qualify as an independent inventor under 37 CFR 1.9(c) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

Each person, concern or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

- ☒ no such person, concern or organization exists.
☐ each such person, concern or organization is listed below.

FULL NAME _____
 ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME _____
 ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME _____
 ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

FULL NAME _____
 ADDRESS _____

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING: Tester Peter / Gerber Ernst
 TITLE OF PERSON SIGNING President & CEO Engineering Manager
 OTHER THAN OWNER:
 ADDRESS OF PERSON SIGNING: REGO-FIX AG, Obermattweg 60, CH-4456 Tenniken

SIGNATURE: *Peter Tester* DATE: 12.1.2002